

September 2025 Q&A

1. With regards to ingestion or exposure to chemically treated lake water: I am uneasy about:

a. accumulation of chemical due to water movement and possible different breakdown processes resulting in a longer half-life and accumulation in sediment. If I understood the SEPRO ecological information sheet, it said 111 days for half-life with a pH7 (DT50 test) and, that the chemical also failed to pass OECD/EEC tests for biodegradability. This seems inconsistent with the FAQ document from the RDKB/Keefer Ltd that outlines SEPRO expects a 1–6-day half- life. In recommendations from the State of Massachusetts, the Label advice for ProcellaCOR EC was quoted: “treatment of aquatic weeds can result in oxygen depletion and loss due to decomposition of dead plants which may cause fish suffocation, particularly in high plant density areas”. These types of inconsistencies leave a lot of doubt in what to expect.

For clarity, I am breaking this question into two separate sections:

1. Length of half-life and biodegradability of florpyrauxifen-benzyl

The difference in numbers has to do with the specific conditions of each type of breakdown, as florpyrauxifen-benzyl (FPB) behaves differently depending on the particular conditions it is exposed to. The primary route for the breakdown of FPB is **aqueous phytolysis***, which is the breakdown of compounds in water due to the absorption of light photons. In other words, it is the breakdown of aquatic compounds due to sunlight exposure. Field dissipation studies conducted in Florida and North Carolina used applications of FPB at 50 ppb and found the compound showed water half-lives of 1.4 – 2.3 days.

The SePRO Safety Data Sheet lists values based on **hydrolysis***, which is the breakdown of a compound due to water alone. This is a slower degradation process than aqueous phytolysis. The values reported in the Safety Data Sheet indicate the amount of time it takes for FPB to break down in water with differing pH values, without exposure to sunlight. At pH 7 (neutral water) FPB takes 111 days to break down. Due to Eurasian watermilfoil growing in shallow, sunlit waters, it is highly unlikely that ProcellaCOR would be applied to water without exposure to sunlight. If application is pursued, the RDKB will work with applicators to ensure the application plan keeps ProcellaCOR in shallow, sunlit waters, where it can quickly break down.

***NOTE: The FAQ document incorrectly labelled aqueous phytolysis as hydrolysis. We apologize for any confusion this caused.**

2. Oxygen depletion due to plant breakdown.

The breakdown of dead aquatic plants leads to oxygen depletion and, in the case of extremely dense areas of decomposing organic matter, “dead zones” in the immediately adjacent water. Deoxygenation is due to bacteria and microorganisms in the water using oxygen as they break down the dead plant material. This is already happening in Christina Lake because of Eurasian watermilfoil (EWM). EWM grows in thick mats during the summer, then dies back in the fall. As these mats decompose, they reduce oxygen levels in the surrounding water, and the denser the mat, the more severe the deoxygenation.

The use of ProcellaCOR will cause EWM to die back and is expected to cause deoxygenation as the dead plants decay. However, this deoxygenation is the same process that is already occurring naturally with the infestations as they die back in the fall. To reduce risks, it is possible to stagger the application of ProcellaCOR over a period of several weeks and treat areas with very dense infestations in sections. This

approach allows for more gradual decomposition of plant material, slows bacterial consumption of oxygen in the water column, and helps protect fish and other aquatic life from sudden drops in oxygen.

b. How do you control exposure to the chemical outside the treatment area from drift? Although SEAPRO says the herbicide is safe in certain circumstances, it still lacks the longevity and the breadth of situations - which leaves the community of CL unnecessarily exposed to negative future consequences. I think there is 2-year data on rats, but not pregnant women and children-that is not an acceptable risk. Hoping that there will be no long-term problems vs knowing long term data is very different.

Given that ProcellaCOR FX is directly applied to the water column, there is the potential for the herbicide to drift. On the ProcellaCOR FX Specimen Label, SePro outlines the different application techniques that can be used to treat Eurasian watermilfoil such as sub-surface injection, surface spray or trailing hose. For all application methods, they outline specific directions that should be followed to ensure effective application and minimize the potential for drift. If ProcellaCOR FX were to be applied to Christina Lake, the District would work closely with the licensed applicator to implement management strategies tailored to the target weed, management objectives and site conditions.

2. It is difficult to believe a chemical targeting a patch in the south end of Christina Lake will stay put and only effect those plants in that area. The SEPRO chemical label says it's: "a selective systemic herbicide for management of freshwater aquatic vegetation in slow moving/quiescent waters with little or no continuous outflow..." (Specimen Label for ProcellaCOR EC -EPA Reg No. 67690-80 Produced by SEPRO Corp) Christina Creek is an outflow for the Lake and just up from it is an inflow: Sutherland creek. By following the labels recommended application, the south end of the Lake would not be an appropriate body of water to treat because it is not a still body of water. Also, I believe there is a drinking water intake pipe located out from the public beach for the south of the Lake, which is concerning by itself; but it also would create water currents; as do springs; the two creeks; and the topography of the lake bottom; the seasonal stratification and weather. It seems a poor match according to their label & likely chemical drift could happen at Christina Lake - a lake with moving waters.

We acknowledge the potential for ProcellaCOR FX to drift within the water column as there is no guarantee that following application, it will not do so. However, in regard to the conditions of Christina Lake, while there is some normal inflow and outflow to the lake from creeks and spring freshet, the lake is not considered to have continuous outflow, as the lake gains and loses water throughout the year. A lake with continuous outflow, also known as an open lake, has water continuously flowing out of it often to a river or sea. For instance, the Great Lakes which deposit into the St. Lawrence are considered open lakes.

Additionally, if ProcellaCOR FX is accepted for use in Christina Lake, its application would be done by a licensed and SePRO authorized applicator who would ensure that the lake, and its conditions are eligible for application.

3. The south end of CL is habitat to animals in the nature park, Christina Creek, SutherlandCreek and the Lake. The 2018 Park management Plan, (RDKB) lists in its management plan to use the precautionary principle to guide decisions and to conserve it's at-risk species and ecosystems. Several red and blue listed species have habitat that could be impacted such as the American Badger, Great Basin Spadefoot frog, Emma's Dancer, and Western River Cruiser. Other At-Risk Species observed are the Blotched Tiger Salamander, Olive clubtail, River Jewelwing. The western painted turtle requires aquatic vegetation and habitat like that found in the south end of Christina Lake. The south end of the Lake is unique to the species it supports. How can one realistically contain the chemical to limit

exposure to these animals when for example a turtle could be anywhere in proximity to milfoil treatment areas? The degree of risk to these species seems irresponsible without long term evidence of the products safety.

Prior to approving the product for use in Canada, Health Canada's Pest Management Regulatory Agency reviewed results from over 100 studies that tested the aquatic herbicides impacts on human health, non-target species, and the environment. They did not find that the product had any adverse effects on any of these criteria. Furthermore, a number of peer-reviewed studies has concluded that it does not pose a risk to fish, amphibians, reptiles, and mammals. The herbicide specifically targets a growth hormone pathway found in plants that animals do not possess.

The RDKB recognizes that a number of at-risk species call Christina Lake home and prioritizes effective conservation of these species. If ProcellaCOR FX were to be used in the lake, the District would employ mitigation measures to attempt to minimize exposure of these at-risk species and their habitats to the aquatic herbicide. However, in the case where such species are inadvertently exposed to the herbicide, peer-reviewed research has found that their health would not be compromised.

4. If the herbicide is diluted because of water movement and seeps to surrounding areas, can it in fact create more super high growth milfoil or other plants because it has stimulated the growth hormone but not enough to cause unregulated growth? Is there a possibility of a resistant weed emerging? Is this something they have data on?

In all the lab and in-situ applications that SePro has conducted, there have been no reports of a herbicide-resistant weed emerging. While there is the possibility of a resistant hybrid milfoil weed emerging, this can be minimized by following herbicide application recommendations and employing integrated invasive management practices. For instance, in order to manage weed resistance, the ProcellaCOR FX Specimen Label states the following: "Any plant population may contain or develop plants naturally resistant to ProcellaCOR FX herbicide or other Group 4 herbicides. The resistant biotypes may dominate the plant population if these herbicides are used repeatedly in the same site. [...] Appropriate resistance-management strategies should be followed."

5. What would be the parameters of success? Would success mean most plants in the targeted area would be killed and the native ones would grow back in 2-5 years? "Historically the south end littoral zone supported a moderately dense and diverse native macrophyte community", p 19., Sept 1994, CL Water Quality Assessment and Objectives, Ministry of Environment, Lands and Parks. According to this report there are over 50 aquatic plant species identified in CL. It seems to me the Keefer presentation said the herbicide will likely affect native plant species so what degree is acceptable in terms of killing/damaging native plants? There is so much more to know on impacts specific to CL. Would CL's unique ecosystem be sacrificed because we are impatient for more comprehensive long-term data?

The goal of the RDKB is to effectively manage and control Eurasian water milfoil in Christina Lake. Now established, milfoil will never be fully eradicated. Dense mats of milfoil do not allow for the establishment or growth of native plant species, impacts water quality and has other detrimental impacts.

If ProcellaCor FX was to be utilized, the intent would be to focus use only on areas that are large dense infestations of milfoil, that cannot be reasonably managed/controlled with the use of the dive crew or floating benthic mats. Treatment would reduce milfoil levels that would then allow for the dive crew to effectively treat the area, and ideally native plant communities to re-establish. Re-establishing an

ecological balance that supports the growth and sustainability of native plant species will have positive effects from an ecosystem health perspective, recreational and tourism related community benefits.

6. Procella COR FX suggests of highly selective targeting of invasive aquatic plants. This is not seeming to be consistent with its own research according to SEPRO's paper of January 28, 2019, table 1 which lists the sensitivity to common native aquatic plants. Their land application also warns the number of plants that could be affected by unintended exposure which is in contrast to making the "highly selective" claim. The Keefer presentation talked about dicot plants being affected by the chemical. Of the 50 species in CL, do we know how many are dicot plants? In the RDKB package it said 8 plants were dicots. It seems backwards to justify the chemicals use, in order to encourage rich native plant re-growth, when we could be potentially killing or damaging all of those same plants. And if the chemical has to be reapplied, when would the native species re-establish?

The active ingredient in ProcellaCOR FX, florpypyrauxifen-benzyl, was initially developed as a herbicide for agricultural food crops such as rice. However, the formulation has since been modified to selectively and effectively control a number of invasive aquatic plants. Therefore, its effects on terrestrial versus aquatic plants do differ significantly.

Since the District is considering the use of ProcellaCOR FX in an aquatic environment, effects to native aquatic vegetation were investigated.

Studies have shown that the aquatic herbicide could impact native dicots, yet in all studies, plants that were impacted and showed symptoms experienced only minor damage. It is important to note that ProcellaCOR FX does not directly encourage or benefit native plant re-growth. Instead, by removing dense invasive milfoil mats, it reduces competition for space, light, and nutrients, giving native plants a better chance to reestablish. In cases where re-application is needed, invasive Eurasian watermilfoil will continue to be controlled, while native species can re-establish over time, likely with limited impact from the herbicide. Targeted application will be used to minimize herbicide exposure to native plants.

It is important to note that in areas with dense Eurasian watermilfoil (EWM) mats, few if any native aquatic plants are able to grow. The milfoil forms thick mats that outcompete native vegetation for light, space, and nutrients, severely restricting their growth. These dense patches are the primary targets for ProcellaCOR FX application. Because native plants are already absent in these areas due to competition, the likelihood of harming native vegetation during treatment is minimal, while the removal of milfoil allows space and resources for native plants to re-establish over time.

7. When researching other Lakes in the USA, the Lake George Association reviewed the entire US EPA registration docket and quoted the EPA: "due to lack of comparative information about superior selectivity to native plant species, the agency cannot conclude that this is a benefit of registration". Ambiguous information is not a good for risk mitigation. An environmental advocate, Cynthia Moulton, PhD., Carleton University-ecotoxicology (vtdigger.org) who even worked at the EPA in the office of Pesticides, said: "using Procella COR EC poses unacceptable risk and adverse effects to the non-target organisms in Lake Bomoseen..." This speaks to the fact that there are still divided opinions in the scientific community.

To clarify, ProcellaCOR EC is a different product that is an "older generation" version of the herbicide. The main difference is that FX is the newer, more effective, and lower-application-rate version of the SC formulation, providing better control of invasive aquatic plants at reduced chemical usage and with no restrictions on drinking water after application, while EC is an older, higher-application-rate, and less effective version that may also have restrictions on its use.

As with any pesticide product, there will be differences in opinions on effectiveness, risk and interpretation of data. Ultimately, ProcellaCOR Fx has been approved for use in Canada by Health Canada for which this registration underwent a robust and peer-reviewed scientific process.

The use of the pesticide products should always be considered on a case-by-case basis with close attention paid to local impacts, concerns and conditions which is why RDKB is running a thorough and inclusive research/consultation stage.

8. I would like to know what happens if the herbicide seeps into deeper water in a real lake vs in a controlled lab. Results from a lab setting doesn't ease my apprehensions. The RDKB question sheet says PorcellaCorFX breaks down in a week (Keefer presentation) but if it drifts to deeper water it could take 111 days, (which is reported by SEPRO documents) because break down is slower because the sun wouldn't reach it. With water movement and the Lake being oligotrophic, if currents take the chemical to the deeper areas would the chemical be present an unknown time? Also, if the by-products degradation (the acid form, albeit a weaker chemical form) shift to deeper areas and doesn't biodegrade like in a lab situation (via light) would we even know the timeframe it would be present. I see how much EWM floats around in various parts of the lake, so it's difficult to believe that this chemical or its by-products won't be shifting to other parts of the Lake. Finally, can we be sure that a lake floor with an altered nutrient balance, would not give rise to other problems-like algae growth with the low oxygen areas?

At present, there is minimal long-term data on ProcellaCOR FX seepage and breakdown in deep water. As you stated, in the absence of sunlight, such as in deeper waters, breakdown will take longer. Should application be pursued, the RDKB will take every precaution to create an application plan that minimizes the chance of herbicide transport to deep water (e.g. looking at hydrological models of the flow in the lake and determining areas with both minimal flow and high density EWM infestations).

Although decomposing EWM may alter the nutrient balance of the lake floor, it is unlikely to cause algae growth. As discussed in question 1, decomposing organic matter can cause low oxygen areas in the water surrounding the decomposition. Decomposing algal blooms also cause low oxygen areas for the same reasons (microorganisms using water in the water column to break down organic matter); however, algae blooms are not expected to be caused by the breakdown of Eurasian watermilfoil.

9. My understanding is that the majority of Christina Lake EM has been controlled with divers, and only parts of the lake at the south end are an issue. So, if diver EWM pulling is providing success for 85% of the Lake, can we wait a little longer instead of taking a risk? Could we use a less drastic management effort and mark with buoys a lane in/out of the infested areas for watercraft to control spread, along with the ongoing management tools?

The RDKB is continually looking at alternative and emerging control methodologies for milfoil. For example, in addition to the research into ProcellaCor FX, a floating benthic mat pilot project has been underway since 2023. The purpose of these investigations is to establish a toolkit of methods that can be utilized effectively to address changing milfoil growth patterns within Christina Lake.

10. On the subject whether or not this is a forever chemical (PFSA)... with the Minnesota Dept of Agriculture saying it is but the EPA not, why are we so quick to accept that the lower standard is the standard to follow (even if Health Canada have accepted this lower standard)? If this is still being debated, why don't we use caution! Shall we keep in mind the answer provided by an RDKB staff person in the Join the Conversation comments: "low risk" is not "no risk".

As previously mentioned, the District is aware of the different standards across regulatory bodies and is taking all these different perspectives into consideration during the research/consultation stage.